REDACTED VERSION

TECHNICAL SAMPLING AND ANALYSIS PLAN

CONDUCTING EMERGENCY RESPONSE ACTIVITIES

LARD OIL COMPANY, INC.
DENHAM SPRINGS FACILITY
914 FLORIDA BOULEVARD
DENHAM SPRINGS, LOUISIANA
LIVINGSTON PARISH

LDEQ AGENCY INTEREST NO. 32468

PPM PROJECT NO. 542321/ER

AUGUST 2016

9828402

TABLE OF CONTENTS

PAGE

TABLE OF CONTENTS (continued)

1.0 INTRODUCTION

This Technical Sampling and Analysis Plan (TSAP) includes all field methodology and sampling procedures required to characterize the vegetation, surface soil, subsurface soil, surface water, groundwater, and vapor concentrations in ambient air at the subject site, as required by the Louisiana Department of Environmental Quality (LDEQ) Risk Evaluation/Corrective Action Program (RECAP) Document. A Site Location Map is provided as **Figure 1, Site Location Map**, in **Appendix A, Figures**.

Based on Table 3-1 in Appendix D of RECAP, the following constituents of concern are identifiers for the presence of highly refined based oils:

- Total Petroleum Hydrocarbons – Diesel Range Organics (TPH-D)
- TPH – Oil Range Organics (TPH-O)

The purpose of the TSAP is to insure proper field methods for sampling and handling of all potentially impacted media are followed. Proper field methods will insure that all data collected can be utilized for evaluation of the site with RECAP to establish cleanup standards.

2.0 PROJECT DATA QUALITY OBJECTIVES

2.1 DATA USES

Data will be collected and evaluated with regard to usability for a RECAP evaluation. Specifically, the data shall be evaluated to assess the effect of quality control (QC) issues on data usability [Risk Assessment Guidance for Superfunds, Volume I, Human Health Evaluation Manual, Part A, Environmental Protection Agency (EPA) 540/1-89/002].

2.2 DATA MANAGEMENT

Data management and project tracking will be conducted by the project manager to effectively manage the project, and will include:

- Assignment of a single point of contact through which all client communications flow.
- Use of state of the art management software to facilitate project tracking and schedules.

3.0 SAMPLING RATIONALE/DESIGN

3.1 SAMPLE COLLECTION, SCREENING RATIONALE, AND SAMPLE ANALYSIS

3.1.1 Vegetation Sample

Vegetation samples (*i.e*. grass clippings, leaves, branches) will be collected from each property where oil impact is suspected. Vegetation will be trimmed or cut from the plant and placed in clean laboratory prepared containers. The samples will be submitted to the laboratory for fingerprint and/or TPH-D and TPH-O analysis.

3.1.2 Housing Materials Samples

Housing material samples will be collected from each property that oil impact is suspected. For materials located inside or outside the structure, a 10-cm square gauze will be dampened with deionized water will be used to wipe the surface of the impacted material. A 10-cm by 10-cm surface area will be wiped with the gauze in accordance with American Society for Testing and Materials (ASTM) D6661 "Standard Practice for Field Collection of Organic Compounds from Surfaces Using Wipe Sampling". The gauze will then be placed in clean laboratory prepared containers. If a wipe sample cannot be collected, a sufficient amount of housing material will be removed and placed in clean laboratory prepared containers. The samples will be submitted to the laboratory for fingerprint and/or TPH-D and TPH-O analysis.

3.1.3 Surface Soil

Prior to surface soil collection, Louisiana One Call will be notified. During the initial cleanup phase, surface soil samples may be collected from the ditches located in the servitude. The samples will be collected in clean, laboratory supplied containers by

scraping the surface soil [approximately 0 to 6 inches below ground surface (BGS)]. Each sample will be analyzed for fingerprint and/or TPH-D and TPH-O.

Surface soil samples will be collected from locations on each property that are most likely to be impacted. Surface soil locations have not been determined at this time, but will be collected once approved by the regulatory agency. Soil samples will be collected from each soil boring at continuous 2-foot intervals for laboratory analysis to a maximum depth of 3 feet BGS or first encountered groundwater. The samples will be submitted for laboratory analysis and analyzed for TPH-D and TPH-O. The laboratory results will be compared to the Non-Industrial RECAP Screening Option Screening Standards (SO SS) for surface soil. Any surface soil samples that exceed the RECAP SO SS for TPH will be analyzed for Extractable Petroleum Hydrocarbons (EPH) Ranges by the Massachusetts Department of Environmental Protection (MADEP) Method. Additionally, Synthetic Precipitation Leaching Procedure (SPLP) analysis (Method 1312) may be performed on the highest constituents in soil above the RECAP SO SS. A RECAP evaluation will be prepared, if necessary, to develop Non-Industrial RECAP limiting standards.

Upon completion of sampling efforts, each boring will be abandoned by filling with cuttings or bentonite chips/pellets from the termination depth to just below ground surface.

3.1.4 Groundwater

Groundwater samples, if required by the regulatory agency, will be collected from temporary and/or permanent monitoring wells. The wells will be purged of three well volumes (if bailed) or allowed to stabilize (if low flow purge). The samples will be collected by manually bailing or using a low flow purging/sampling pump, stored on ice in appropriate sample containers, and prepared for shipment to the laboratory. Upon completion of sampling efforts, each boring will be abandoned by filling with bentonite chips or pellets from the termination depth to just below ground surface. Affected surface areas will be patched accordingly.

The samples will be submitted for laboratory analysis and analyzed for TPH-D and TPH-O. The laboratory results will be compared to the Non-Industrial RECAP SO SS for groundwater. Any groundwater samples that exceed the RECAP SO SS for TPH will be analyzed for EPH Ranges by the MADEP Method. The samples will be compared to the groundwater RECAP SO SS. The sampling locations having constituent concentrations

that exceed the groundwater RECAP SO SS shall be identified. A RECAP evaluation will be prepared, if necessary, to develop Non-Industrial RECAP limiting standards.

3.1.5 Surface Water

Surface water samples may be collected from areas that exhibit sheen. Surface water samples will be analyzed for fingerprint and/or TPH-D and TPH-O.

The constituent concentration for each sampling location will be compared to the water quality criterion (LAC 33:IX.1113, Table 1 or, if not available in LAC 33:IX.1113, Table 1, an equivalent risk-based value may be calculated in accordance with the guidelines in *Human Health Numerical Criteria Derivations for Toxic Substances*, DEQ, Office of Water Resources, June 23, 1994).

3.1.6 Ambient Air

Daily photoionization detector (PID) readings will be collected daily. Initially, on August 19, 2016; 18 locations were established for daily readings. Supplemental locations were added on August 24, 2016, yielding a total of 31 locations being monitored. Additional locations may be added at a later date. Locations of daily PID readings are shown on **Figure 2, Ambient Air Reading Locations**, in **Appendix A**.

Ambient air grab samples will be collected at select locations utilizing 1.4-Liter SUMMA canisters. These samples will be collected from the breathing zone at the following areas:

- Three locations outside the suspected oil impacted area (control samples)
- Three locations within the suspected oil impacted area
- Any home where oil impact is suspected and/or the homeowner has a concern for their health

A map showing the locations outside and inside the suspected oil impacted area is provided as **Figure 2, Ambient Air Reading Locations**, in **Appendix A**. Grab samples collected outside and within the suspected oil impacted area will be collected when there are no passing vehicles in an effort to prevent contamination from outside sources.

Each summa canister will be sampled for TPH (C5-C12), TPH (C6-C10), and TPH (C3-C12) by EPA Method TO-3, the method for the determination of volatile organic compounds in ambient air by gas chromatography. Detection limits for this method vary, but are typically 0.1 ppmv. The reporting limits as provided by SGS Accutest of Scott, Louisiana are provided in **Appendix C, Reporting Limits**.

3.2 LABORATORY ANALYSIS

Laboratory analytical methods that that will be required on collected samples, along with containers, preservatives, hold time, precision, and detection limits are provided in **Table 1, EPA Laboratory Test Methods and Required Containers, Preservation, and Hold Times**, in **Appendix B, Tables**.

3.3 SAMPLE IDENTIFICATION

There are several media types that may require sampling for this project, which include vegetation, housing materials (sheet rock, siding, wood, etc.), surface soil, surface water, subsurface soil, groundwater, and ambient air. The following sections indicate the sample identification nomenclature for each media type collected during this project. Details for the sample identification nomenclature are provided in **Appendix D, Sample Identification Protocol**.

3.3.1 Property Location Number Identification

Property locations will be identified in the sample ID by the corresponding property address number. For example, a surface soil sample collected at property (b) (6) would be(b) (6)

3.3.2 Street Identification

The second identifier in the sample identification will be the street identifier, which is provided below:

- C Capitol

(b) (6)

- L LaSalle

- H Hazelnut
- WA Wanda Avenue
- Ch Chestnut
- D Don
- RA Range Avenue

(b) (6)

For example, a surface soil sample collected at property (b) (6) would be (b) (6) - (b) (6) .

3.3.3 Media

The third identifier in the sample identification will be the type of media sampled, which is provided below:

- So Surface Soil
- Se Sediment
- Wa Water
- Wi Wipe
- V Vegetation
- H Housing Materials

For example, a surface soil sample collected at property (b) (6) would be (b) (6) (b) (6)

3.3.4 Location

The third identifier in the sample identification will be the location of the sample whether it is located on the interior of a structure or exterior of a structure as follows:

- In Interior
- Ex Exterior

For example, a surface soil sample collected at property (b) (6) would be (b) (6) (b) (6)

3.3.5 Sampler Initials

The fourth identifier in the sample identification will be the initials of the sampler. Potential samplers include but are not limited to the following personnel:

- JB Jason Beauvais
- PC Phaedra Canright
- ML Michael Luckett
- TP Taylor Pellerin

For example, a surface soil sample collected by Michael Luckett at property (b) (6) would be (b) (6)

3.3.6 Sample Identification

The first sample for the location will be denoted with the number one. Any additional samples collected for the property on any single day will be consecutively numbered. For example, the second surface soil sample collected by Michael Luckett at property (b) (6) (b) (6) would be (b) (6)

4.0 FIELD METHODS AND PROCEDURES

Field quality control requirements and documentation of all field sampling and observations is critical to provide a historical record for future reviews and analysis of the usability of the data produced. Each field personnel will keep a field logbook that will contain documentation of field activities that involve the collection and measurement of environmental data. Additional forms may be used in the field to record related activities.

This section provides a step-by-step approach that field personnel will adhere to involving the following field work:

- Health and Safety procedures.
- Field equipment and equipment calibration.
- Field sampling procedures for each media type.
- Sample identification nomenclature.
- Field data documentation procedures.

4.1 HEALTH AND SAFETY PROCEDURES

PPM Consultants, Inc.'s (PPM's) Health and Safety Plan (HASP), provided under a separate cover, describes the personal protection and safety procedures to be followed by PPM personnel and subcontractors for field activities at the site. The HASP has been prepared in accordance with the Occupational Safety and Health Administration (OSHA) Hazardous Waste Operations and Emergency Response, Interim Final Rule, 29 CFR 1910, 120; OSHA Standards 29 CFR 1910 (General Industry) and 1926 (construction); the joint NIOSH/OSHA/USCG/EPA, *Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities,* dated October 1985; and National Fire Protection Association (NFPA) Safety Guidelines. The HASP has been developed for typical conditions encountered during field activities of this nature. Should any unexpected conditions arise; the HASP will be amended to accommodate site-specific conditions.

4.2 FIELD PROCEDURES

Specific equipment and field sampling procedures to be utilized for this project are described in the following sections.

4.2.1 Field Equipment

Major field equipment which may be utilized during site activities along with the equipment's primary use is included in the **Table 2, Field Equipment**, in **Appendix B**.

4.2.2 Equipment Calibration and Maintenance

Sampling and analysis generally requires the use of varied equipment and tools in the gathering of environmental data. All field equipment will be inspected to determine if it is adequate for the media, parameters to be sampled, and the tests to be performed.

Data may be generated onsite through the use of real-time equipment, such as a PID, OVA, or a pH meter. Prior to mobilization to the field, the field-testing equipment will be examined to ensure that it is in working condition and properly calibrated. Forms to be used in the field to document calibration are provided in **Appendix E, Calibration Forms**. Calibration procedures to be followed for calibrating field equipment are described in the following sections:

4.2.2.1 Hydrocarbon Analyzer Calibration

For calibration of hydrocarbon analyzers (OVA and/or PID), PPM will follow *EPA Method 21 – Determination of Volatile Organic Leaks* for proper sampling and calibration of hydrocarbon analyzers. Calibration of the hydrocarbon analyzers will be conducted, before use, in accordance with the manufacturer's specifications and EPA Method 21. Calibration will be conducted more often as field conditions dictate; however, calibration will be conducted no less than once per week. The importance of the calibration procedure is to document response factors, response time, calibration gas, etc. to ensure that instrument readings are accurate. Calibration activities will be recorded in the field personnel's field logbook, and the records will be kept on file at PPM's Baton Rouge office for review. The PID and/or OVA will be kept on a continuous battery charge during periods of non-use.

4.2.2.2 pH Meter Calibration

Each pH meter will be calibrated per the manufacturer's specifications. Each pH meter will be calibrated prior to each use or if used multiple times during a day, then daily. Each instrument has a designated logbook, which is kept in PPM's laboratory sample container storage room. On the cover of each logbook, there is a serial number and PPM's internal equipment number, which matches the corresponding pH meter. The initial measured result and the corrected value should be recorded in the logbook for each pH buffer solution, as well as the date and time of calibration, and the initials of the technician who performed the calibration. Routine in-house "spot checks" will be made to ensure that all pH meters are being calibrated before each use.

The instrument must be calibrated with two standard pH buffer solutions. If the expected pH reading is greater than 7.0, usually the meter is calibrated with the pH 7.0 buffer and the pH 10.0 buffer. For expected measurements below 7.0, buffers of pH 7.0 and pH 4.0 should be used for instrument calibration.

The following are procedures for calibration of the two types of pH meters that PPM current owns (Ultrameter and Hydac® pH meters):

Ultrameter Calibration Procedures (blue, one-piece pH meter)

- Rinse cell cup 3 times with 7.0 pH solution.
- Fill cell cup with 7.0 pH solution.
- Press pH, then press CAL. "CAL", "7" and "Buffer" will appear on the display.
- Press the "up" and "down" arrows until display agrees with the actual buffer value.
- Press CAL once to accept the value on the display.
- Rinse cell cup 3 times with either 4.0 pH or 10.0 pH solution.
- Repeat steps 4 and 5.

4.2.3 Field Notes

All field activities will be documented by all field personnel by utilizing field note paper and/or photographic records. These records will be stored in the office files for the project and will be utilized to produce a report of those field activities.

4.2.3.1 Field Note Paper

Records of field activities will be documented on field note paper. For each field event, field personnel will include the following information on the note paper:

- The site name and location of the site.
- Sample location and description.
- Time of site arrival/entry on site and time of site departure.
- Date and time of sample collection.
- Type of sample media (vegetation, housing material, soil, surface water, groundwater, and/or ambient air).
- Names of field personnel.
- Field instrument readings.

- Field calibration forms.
- Field observations and details.
- Documentation of any deviation from protocol, and signatures of field personnel.

Additional information that may be included in the field logbook includes the following:

- Team members and their responsibilities.
- Other personnel on site, including subcontractors and LDEQ personnel.
- Notations where split samples were collected with the EPA.

4.2.3.2 Photographic Records

Photographs will be taken at sample locations and at other areas of interest on and off site locations. The photographs will aid in verification of the data recorded in the field notes. For each photograph taken in the field, the following information will be recorded in the field notes:

- Time, date, location, and weather conditions.
- Description of the subject photographed.

4.3 SAMPLING PROCEDURES

4.3.1 Vegetation Sampling

Vegetation samples will be collected from shrubs/trees/grass that are suspected to have oil impact. Sampling collection techniques are as follows:

- Disposable gloves will be worn during all sampling activities. Vegetation samples (grass cuttings, leaves, branches) will be collected utilizing cutting tools or other lawn tools (lawnmower, sheers, rakes, etc.).
- Samples will be placed in clean 4 oz. jars and properly labeled.
- The sample containers will be immediately placed on ice inside of an insulated cooler and stored at 4°C.

4.3.2 Housing Material Sampling

Housing material samples will be collected from areas that are suspected to have oil impact. Sampling collection techniques are as follows:

- Disposable gloves will be worn during all sampling activities. Housing material samples will be collected utilizing cutting tools, if possible.
- If material cannot be collected for analysis, a wipe sample will be used to collect the sample.
- Wipe samples will be conducted by wetting a 10 centimeter (cm) square gauze with a small amount to deionized water and then wiping the affected area.
- Wipe samples will be placed in clean 4 oz. jars and material samples will be placed in 8 oz. jars and properly labeled.
- The sample containers will be immediately placed on ice inside of an insulated cooler and stored at 4°C.

4.3.3 Surface Soil Sampling

A hand auger or hand trowel will be utilized to collect surface soil samples. All sampling equipment will be decontaminated prior to sample collection in accordance with procedures outlined in **Section 4.4, Decontamination Procedures**. Surface soil sampling collection techniques are as follows:

- Prior to sampling surface or shallow soil samples, surface debris will be cleared with a decontaminated shovel or sampling trowel.
- Disposable gloves will be worn during all sampling activities. Soil will be collected from the center of the sampling device and transferred into prepared clean glass containers. Sample containers will be filled to extent possible to allow minimal headspace. The soil will be lightly hand-packed using clean disposable gloves.
- Each glass container will be tightly sealed with a clean Teflon lid and labeled properly.
- The sample containers will be immediately placed on ice inside of an insulated cooler and stored at 4°C.

4.3.4 Surface Water Sampling

Surface water samples (if required) will be collected from surface water bodies, utilizing a sampling jar, will consist of the following:

- The samples will be collected with the sampler facing upstream and placing the sample container until the container is completely filled. Disposable gloves will be worn during all sampling activities.
- Visual check to determine if sheen is present in the stream and to note any discolored vegetation.
- Collection and use of field blanks, trip blanks, rinsate samples, and duplicate samples to insure that Quality Assurance/Quality Control (QA/QC) is being maintained during the sampling efforts.

Sample containers will be completely filled. Lids will be tightly screwed on, and sample containers will be inverted, gently tapped, and visually inspected to ensure that no air remains in the sample. Sample containers will be labeled and immediately placed on ice in an insulated cooler at 4°C.

4.3.5 Soil Boring Installation

A drilling contractor licensed by the Louisiana Department of Transportation and Development (DOTD), will be contracted by PPM and install all soil borings. Soil borings will be installed to provide information on shallow stratigraphy and the delineation of petroleum hydrocarbon constituents. PPM will install these borings in locations adequate to define the horizontal and vertical extent of adsorbed hydrocarbons in soil. The soil borings will be advanced using a hand auger or GeoProbe [direct-push technology (DPT)]. The exact location of the borings will be determined in the field based upon information available from site observations, accessibility, and results documented from the initial inspection.

Each of the soil borings will be pre-drilled using hand-held equipment to a depth of 3.0 feet BGS to ensure the boring is clear of existing underground utilities. The borings will be continuously sampled using clean, acetate liners by the DPT rig. Samples will be visually classified in the field and logged for inclusion in the final report. Additionally, a portion of the sample will be placed into a jar covered with tin foil and allowed to stabilize

at ambient temperature for 15 minutes. A PID reading will be collected from the jar and recorded on the boring log. An example boring log is provided in **Appendix F, Boring Log**. Sampling equipment will be decontaminated in accordance with **Section 4.4**.

4.4 DECONTAMINATION PROCEDURES

Sampling equipment will be decontaminated prior to, and between, each sampling event. The decontamination procedure will consist of the following:

- Sampling equipment will be completely disassembled (except for hand-auger, if used) and placed on a clean surface.
- Prepare three **clean** 5-gallon buckets. One bucket will be used for washing (wash bucket), the next for secondary rinse, and the third for the final rinse.
- Fill two buckets approximately half full with water. Dispense a generous amount of Alconox detergent into one of the two buckets. Mix thoroughly.
- Prepare one spray bottles. Filled with distilled or deionized water.
- Clean equipment with a scrub brush in the wash bucket.
- Place equipment over the second bucket. **Thoroughly** spray equipment with distilled or deionized water. The rinsate sample will be collected from this bucket subsequent to sampling activities at the site.
- At completion of sampling activities, liquids in each bucket should be containerized in a 55-gallon drum.

If the field equipment cannot be cleaned, it will not be used for sampling. Disposable nitrile or PVC gloves will be worn during sample collection and discarded following each sampling event.

5.0 SAMPLE DOCUMENTATION AND SHIPMENT

5.1 LABELING

All samples collected will be labeled in a clear and precise way for proper identification in the field and for tracking in the laboratory. At a minimum, the sample labels will contain the following information:

- Sample Identification;
- Date and time of collection;
- Samplers initials;
- Location of the sample;
- Analytical parameter(s); and
- Method of preservation, if applicable.

5.2 SAMPLE CHAIN-OF-CUSTODY FORMS AND CUSTODY SEALS

Chain-of-custody forms are used to document sample collection and shipment to laboratories for analysis. All sample shipments for analyses will be accompanied by a chain-of-custody form.

The chain-of-custody form will identify the contents of each shipment and maintain the custodial integrity of the samples. Generally, a sample is considered to be in a person's custody if it is either in physical possession, in view, locked up, or kept in a secured area that is restricted to authorized personnel. Until the samples are shipped or delivered, the custody samples will be the responsibility of PPM Consultants, Inc. The sampling team leader or designee will sign the chain-of-custody form in the "relinquished by" box and note date and time.

The sample numbers for all rinsate samples, reference samples, laboratory QC samples, and duplicates will be documented on the chain-of-custody form. The original form is left with the laboratory analyzing the samples.

The shipping containers in which the samples are stored (e.g., usually an ice chest), will be sealed with self-adhesive custody seals any time the samples are not in possession or view of the person in custody of the samples before shipping. All custody seals will be signed and dated.

5.3 PACKAGING

The following outlines the packaging procedures that will be followed:

- When ice is used, it will be packed in zip-locked, plastic bags;
- The bottom of the cooler will be lined with bubble wrap or vermiculite to prevent breakage; and
- All sample bottles will be affixed with sample identification labels and placed in plastic zip-lock bags.

6.0 INVESTIGATION-DERIVED WASTE

Investigative-Derived Waste (IDW) generated during this investigation could include, but is not limited to, vegetation potentially containing oil residue; absorbent pads and booms; soil cuttings produced while installing borings; soils generated for logging field screening and sampling purposes; water well purge water; disposable personal protective equipment (PPE) and sampling utensils; and decontamination fluid from cleaning PPE, sampling equipment, and drilling equipment.

6.1 IDW MANAGEMENT

As IDW is generated, it will be stored at the Denham Springs Lard Oil Facility in a designated area and remain in that location until characterized. IDW will be placed in new or reconditioned, DOT-approved 55-gallon drums. Drums will be in good condition and suitable for transportation. IDW drums will be placed in a configuration that allows room for inspections, operations and maintenance, and handling. Each drum will be labeled with the following: contents, name of generator, and date.

6.2 CHARACTERIZATION

IDW will be disposed of promptly after characterization is performed. Once the IDW is characterized, a determination will be made as to the proper disposal facility. The waste will be profiled at the disposal facility prior to transportation.

7.0 FIELD AND LABORATORY QUALITY CONTROL

Field and laboratory quality control checks and will be implemented during the project. The purpose of quality control checks is to verify adherence to the QA/QC Plan and to provide measurement for method, the sampler's performance, and the laboratory's performance. QC samples are collected and analyzed to determine whether sample concentrations have changed between the time of sample collection and sample analysis, and if so, when and how. QA/QC samples will be collected and subsequently submitted for laboratory analyses for the appropriate parameters.

For soil and groundwater (if required) samples, QA/QC blanks will include at a minimum: one field duplicate sample per 20 samples, one equipment rinsate sample per 20 field samples, one field blank per day, one trip blank per sample cooler containing volatile samples, and one matrix spike/matrix spike duplicate sample per 20 samples.

8.0 CORRECTIVE ACTIONS

Corrective action procedures will be initiated whenever conditions arise that are counter to the standards of quality described in this plan. All project personnel have the responsibility of reporting variances or deficiencies in the approved TSAP to the appropriate PPM management. The deficient activity or procedure will be presented in writing and discussed and a corrective action plan initiated at the direction of management. Incidents of non-conformance will be presented in the final project report, along with procedures implemented to correct the deficiency.

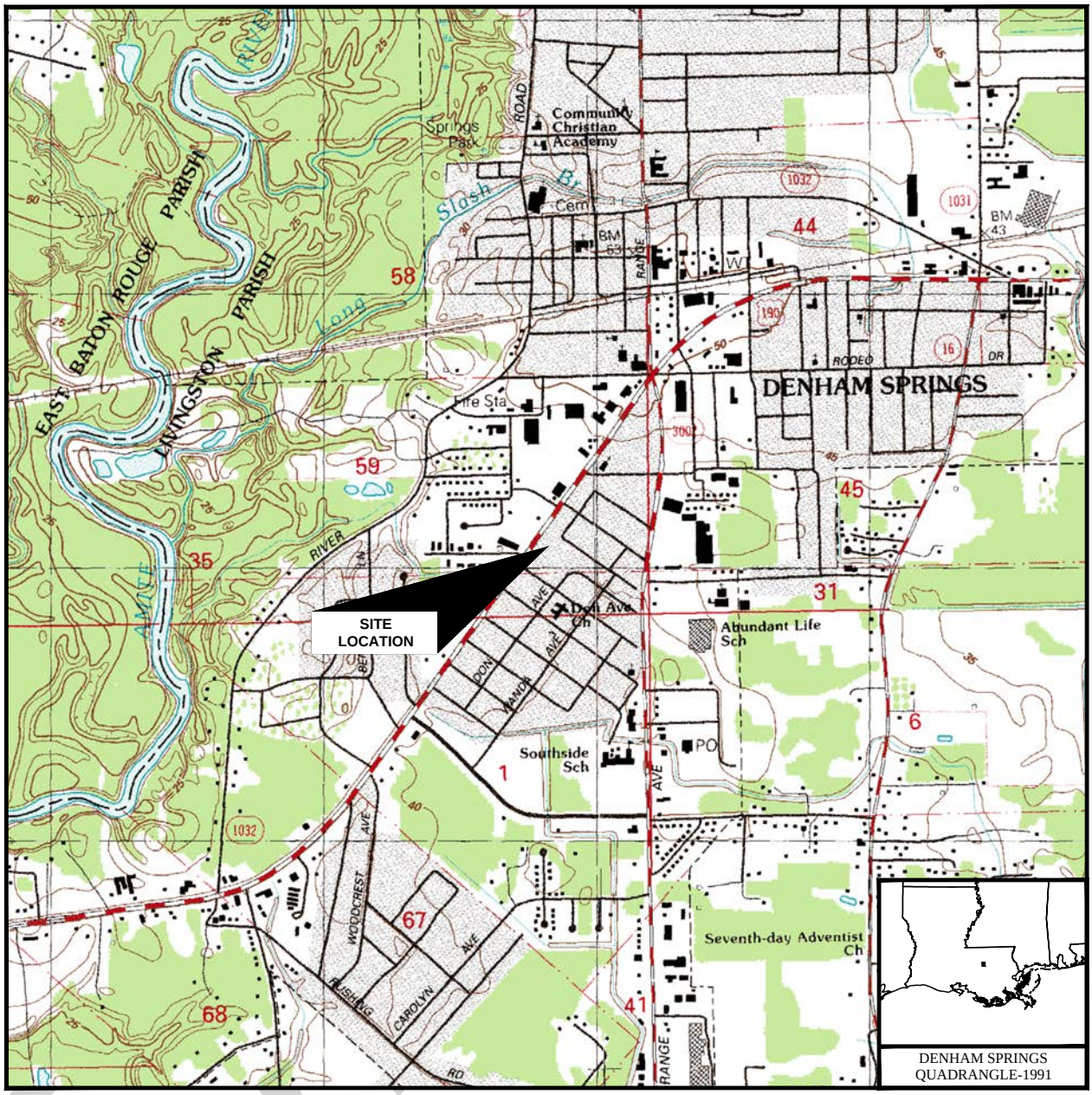
Some corrective actions include the following:

- Retrieving missing information.
- Resolving technical or procedural problems by requesting additional explanation or clarification from the technical team.
- Requesting reanalysis of sample(s) from the extract stored at the laboratory.
- Requesting construction and re-interpretation of analytical results from the laboratory.

- Requesting additional sample collection and analysis for site or background characterization; modeling potential impacts on uncertainty using sensitivity analysis to determine range of effect.
- Adjusting or questioning data based on approved default options and routines.
- Qualifying or rejecting data for use in the site investigation.

APPENDICES

APPENDIX A – FIGURES



SCALE: 1 : 24,000

1 .5 0 1
MILES

1000 0 1000 5000 10,000
FEET

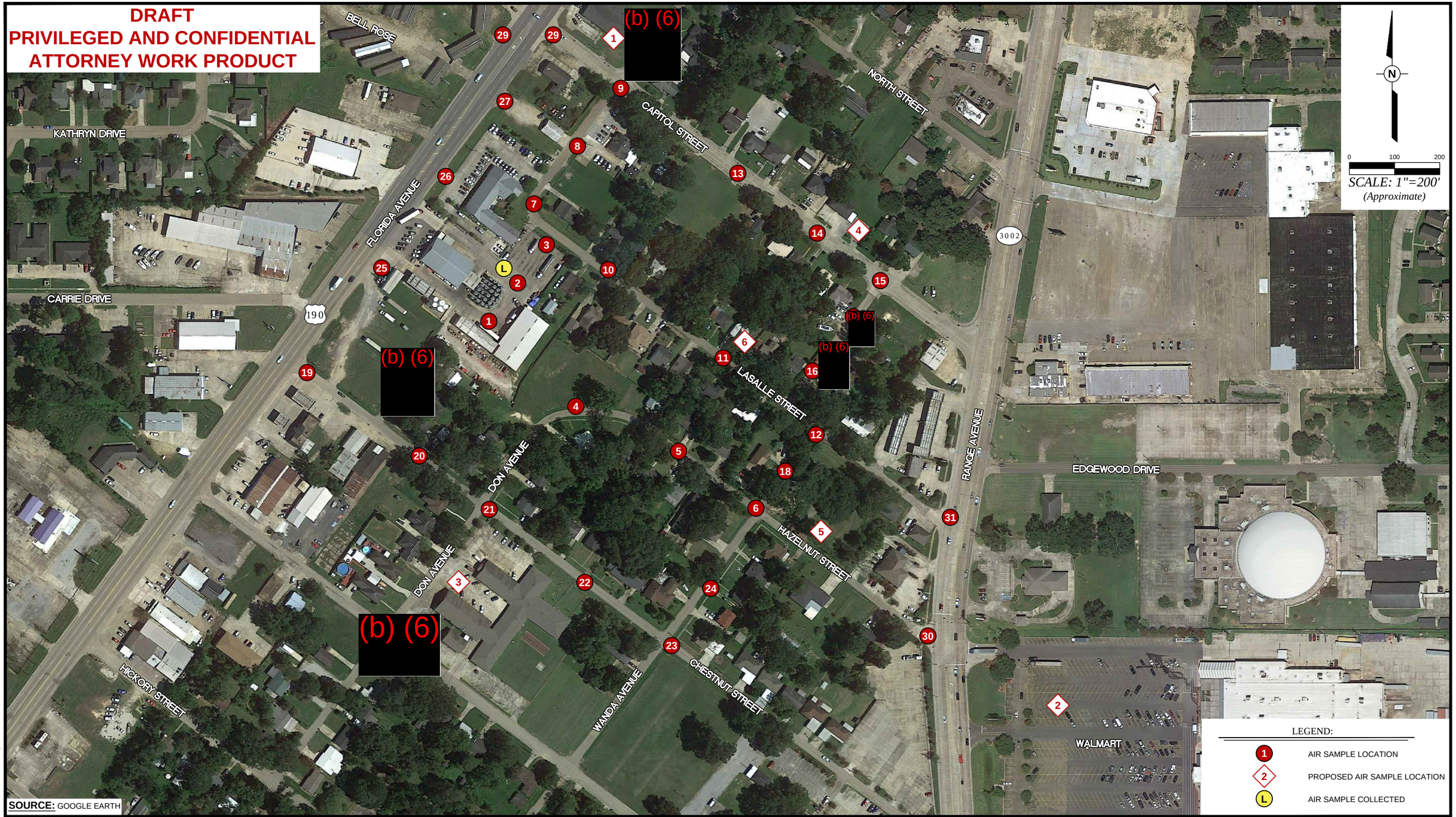
1 0 KILOMETER 1 2
1000 0 METER 1000 2000

N

PPM CONSULTANTS, INC. www.ppmco.com		LARD OIL COMPANY, INC. **DENHAM SPRINGS FACILITY** 914 FLORIDA AVENUE DENHAM SPRINGS, LOUISIANA	SITE LOCATION MAP
DRAWN BY: BWH	DRAWN DATE: 08/25/16		FIGURE NUMBER 1
PROJECT NUMBER: 542321	BILLING GROUP: ER		

Z:\Lard Oil Company\542321\Eri\542321-Er.dwg, 1 slm, 8/25/2016 2:27:54 PM, brian hicks

DRAFT
PRIVILEGED AND CONFIDENTIAL
ATTORNEY WORK PRODUCT



LEGEND:

- 1 — AIR SAMPLE LOCATION
- 2 — PROPOSED AIR SAMPLE LOCATION
- L — AIR SAMPLE COLLECTED

SOURCE: GOOGLE EARTH

PPM CONSULTANTS, INC. www.ppmco.com	
DRAWN BY: BWH	DRAWN DATE: 08/25/16
PROJECT NUMBER: 542321	BILLING GROUP: ER

LARD OIL COMPANY, INC.
DENHAM SPRINGS FACILITY
914 FLORIDA AVENUE
DENHAM SPRINGS, LOUISIANA

AMBIENT AIR READING LOCATIONS

FIGURE NUMBER 2

Z:\Lard Oil Company\542321\Er\542321-Er.dwg, 2 Ambient, 8/25/2016 2:27:57 PM, brian hicks

APPENDIX B – TABLES

TABLE 1
EPA LABORATORY TEST METHODS AND REQUIRED CONTAINERS, PRESERVATION, AND HOLD TIMES

TER	TEST METHOD REFERENCE	SAMPLE CONTAINER/TYPE	PRESERVATIVE	HOLD TIME
Vegetation Media				
TPH-D	8015B	(1) 8 oz./Glass	Cool < 4 degrees C	14 days to extract, 40 days thereafter
TPH-O	8015B	(1) 8 oz./Glass	Cool < 4 degrees C	14 days to extract, 40 days thereafter
Housing Material Media				
TPH-D – Wipe	8015B	(1) 10X10 cm gauge in a 4 oz./Glass/DI H20	Cool < 4 degrees C	14 days to extract, 40 days thereafter
TPH-O - Wipe	8015B	(1) 10X10 cm gauge in a 4 oz./Glass/DI H20	Cool < 4 degrees C	14 days to extract, 40 days thereafter
TPH-D - Material	8015B	Minimum of 33 grams in a 4oz or 8oz Glass	Cool < 4 degrees C	14 days to extract, 40 days thereafter
TPH-O - Material	8015B	Minimum of 33 grams in a 4oz or 8oz Glass	Cool < 4 degrees C	14 days to extract, 40 days thereafter
Soil Media				
TPH-D *	8015B	(1) 4 oz./Glass	Cool < 4 degrees C	14 days to extract, 40 days thereafter
TPH-O *	8015B	(1) 4 oz./Glass	Cool < 4 degrees C	14 days to extract, 40 days thereafter
Surface Water and Groundwater Media				
TPH-D **	8015B	(3) 60 ml clear vials	HCL + Cool <4 degrees C	14 days
TPH-O **	8015B	(3) 60 ml clear vials	HCL + Cool <4 degrees C	14 days
Air Media				
Ambient Air	TO-3	(1) 1.4 liter Summa®canister/Metal	None	14 days

*TPH-D and TPH-O (soil) can be combined into (1) 4oz glass container.

** TPH-D and TPH-O (water) can be combined into (3) 60 ml clear vials (HCL).

TABLE 2
FIELD EQUIPMENT

EQUIPMENT	EQUIPMENT'S PRIMARY USE
SOIL SAMPLING EQUIPMENT	
PID	Used to measure the vapor concentration of the soil sample, in order to determine which samples to submit for laboratory analysis.
Jars and tin foil	Used to conduct headspace analysis of soil samples..
Sample containers	Sample containers are shown in Table 3-1.
Miscellaneous Supplies	Ice, ice chest, ziplock bags, disposal gloves, etc.
Hand Auger (if used)	Used to collect soil samples for vapor screening.
GROUNDWATER SAMPLING EQUIPMENT (if required)	
Interface probe	Used to measure free product/water levels in monitoring wells.
3.5-inch PVC Bailer	Used to purge groundwater from monitoring wells.
PH/Conductivity/Temp Meter	Used to measure the pH, conductivity, and temperature of the groundwater to determine if a representative sample is being collected from the aquifer.
Disposal bailers	Use to collect a groundwater sample subsequent to purging the monitoring well.
Miscellaneous Supplies	Ice, ice chest, ziplock bags, disposal gloves, etc.
Sample containers	Sample containers are shown in Table 3-1.
Surge Block	Used to develop a monitoring well.
55-gallon drums	Used to collect the purge water and decontamination water.
SURFACE WATER SAMPLING EQUIPMENT (if required)	
Sample containers	Sample containers are shown in Table 3-1.
Miscellaneous Supplies	Ice, ice chest, ziplock bags, disposal gloves, disposal bailers, etc.
55-gallon drums	Used to collect the decontamination water.
VEGETATION AND HOUSING MATERIAL SAMPLING EQUIPMENT (if required)	
Sample containers	Sample containers are shown in Table 3-1.
Miscellaneous Supplies	Ice, ice chest, ziplock bags, disposal gloves, gauze, deionized water, etc.
Knife or cutting tool	Used to collect the sample.
AMBIENT AIR SAMPLING EQUIPMENT	
PID	Use during site activities during the excavation process to determine if vapor concentration in the ambient air is at hazardous levels.
Summa® canisters (if needed)	A laboratory container used to collect ambient air samples. The laboratory will provide zeroed Summa® canisters for the project.
Summa canister stand (if needed)	Used to place the intake of the Summa® canister in the breathing zone.
Regulator (if needed)	Used to limit the air flow into the Summa® canister to a 24-hour period.
DECONTAMINATION EQUIPMENT	
Alconox	Soap used to wash sampling equipment.
Distilled or deionized water	Used to rinse sampling equipment subsequent to the alcohol rinse.
Spray bottle	Used to apply the deionized water rinse.
Buckets	Used to capture the decontamination water.
55-gallon drums	Used to collect the decontamination water.
Scrub brush	Used to clean sampling equipment.

APPENDIX C – REPORTING LIMITS

Compound List Report

Product: VTO3TPH Total Petroleum Hydrocarbons
Matrix: AIR Air

May 07, 2014 10:01 am

Method List:	VTO3 AIR	Method Ref:	TO 3/SW846 8010/8015	LT23347
Report List:	TO3TPH ALL			LT23301
RL/MDL Factor:	1			

Compound	CAS No.	RL	MDL	Units
TPH (C5-C12)		25	1.3	ppbv
TPH (C6-C10)		25	3.4	ppbv
TPH (C3-C12)		25	2.9	ppbv

3 compounds reported in list TO3TPH

APPENDIX D – SAMPLE IDENTIFICATION PROTOCOL

SAMPLE IDENTIFICATION PROTOCOL
LARD OIL COMPANY
DENHAM SPRINGS FACILITY
DENHAM SPRINGS, LOUISIANA

Nomenclature for all collected samples will be described using the following template:

(b) (6)

Address # - Street number of the property where the sample was collected.
D = Ditch

Street ID –

C	Capitol
(b) (6)	
L	LaSalle
H	Hazelnut
WA	Wanda Ave
Ch	Chestnut
D	Don
RA	Range Ave

(b) (6)

Media –

So	Surface Soil
Se	Sediment
Wa	Water
Wi	Wipe
V	Vegetation
H	Housing Material

Location -

In	Interior
Ex	Exterior

Sampler Initials of Sampler

Sample ID Sample ID will begin at 1, and continue based on the number of samples at the subject property. If this is a RECAP surface soil or subsurface soil, the depth interval in which the sample was collected will be recorded after the sample number.

Example A surface soil sample was collected at (b) (6) outside by Phaedra Canright, soil sample number one at a depth between 0 and 3 ft bgs.

Nomenclature: (b) (6)

APPENDIX E – CALIBRATION FORMS

Control number: _____
Date (mm/dd/yyyy): _____
User (print name): _____
Calibration gas(es):
Lot number: _____
Supplier: _____
Expiration date: _____

Project number: _____
Project name: _____
_____
Location: _____
_____

Additional equipment control numbers and descriptions: _____

_____

_____

Field procedure before use:

	Check when completed
• Gently unscrew the lamp housing cap.	
• Remove the sensor adaptor with the gas inlet probe, and remove the metal and dust filters from the probe using tweezers.	
• Check to ensure the probe is clean.	☐
• Replace the filters back into the probe cavity and replace the probe assembly.	
• Turn the PID on by pressing the (Mode) key.	
• During the warm-up period, check the pump inlet flow using your finger to detect suction. The warm-up ends when "Ready" is displayed.	☐
• Press the (Mode) key several times until the battery voltage is displayed.	
• Check battery level and record on the space provided. Recharge if below 4.4 V.	_____ V
• Press the (Mode) key several times until "Survey/Ready" is displayed.	
• Press and hold both the (Mode) and the (N/-) keys for 3 seconds.	
• At the prompt "Calibrate/select Gas?", press the (Y/+) key.	
- If calibrating in unclean air, attach the charcoal filter to the PID probe.	☐
- At the prompt "Fresh air cal?", press the (Y/+) key to begin the zero calibration. The display will indicate "zero in progress" followed by a 15 second waiting period. At the end of the calibration, "zeroed!" will be displayed followed by the zero reading.	
- Ensure that the instrument is properly zeroed.	☐
- Press any key to continue. Remove the charcoal filter from the PID probe.	
• At the prompt "Fresh air cal?", press the (N/-) key.	
- Place the regulator onto the calibration gas and connect to the PID probe.	☐
- At the prompt "Span cal?", press the (Y/+) key.	
- At the prompt "Apply gas now!", quickly turn on the calibration gas valve. The calibration takes 30 seconds after which the display will indicate "cal'ed!" followed by the calibration reading.	
- Ensure that the calibration reading is +/- 2 ppm of the calibration gas value.	☐
- Press any key to continue.	
- Turn off the valve of the calibration gas and disconnect from the PID.	
• Press the (Mode) key several times until the "Ready" prompt is displayed.	
• Press the (Y/+) key to start the measurement.	
• To end the measurements, press the (Mode) key followed by the (Y/+) key.	
• Press and hold the (Mode) key for 5 seconds to turn off the PID.	

Signature: _____

Control number: _____ **Project number:** _____
Date (mm/dd/yyyy): _____ **Project name:** _____
User (print name): _____ _____
Location: _____
_____

Calibration solution(s): _____
Lot #(s): _____
Supplier(s): _____
Expiration date(s): _____

Additional information: _____
_____
_____

Field procedure before use:

	Check when completed
pH Zero Calibration	
• Rinse sensor well 3 times with 7 buffer solution.	☐
• Refill both sensor wells with 7 buffer solution	☐
• Press "pH' to verify the pH calibration. If the display shows 7.00, skip the pH Zero Calibration and proceed to section b. pH Gain Calibration.	☐
• Press "CAL/MCLR" to enter calibration mode. The "**CAL**", "**BUFFER**" and "**7**" annunciators will appear. Displayed value will be the uncalibrated sensor.	☐
• Press UP ARROW and DOWN ARROW keys until the display reads 7.00.	☐
• Press "CAL/MCLR" to accept the new value. The pH Zero Calibration is now complete. You may continue with pH Gain Calibration or exit by pressing any measurement key.	☐
pH Gain Calibration	
• The pH calibration mode is initiated by either completion of the pH Zero Calibration, or verifying 7 buffer and pressing the "CAL/MCLR" key twice while in pH measurement mode.	☐
• At this point the "**CAL**", "**BUFFER**" and "**Acd**" or "**bAS**" annunciators will be displayed	
• Rinse sensor well 3 times with acid or base buffer solution.	☐
• Refill sensor well again with same buffer solution.	☐
• Press UP ARROW or DOWN ARROW until display agrees with buffer value.	☐
• Press "CAL/MCLR" to accept 2nd point of calibration. Now the display indicates the next type of buffer to be used.	☐
• Repeat steps above using opposite buffer solution.	☐

Signature: _____

APPENDIX F – BORING LOG

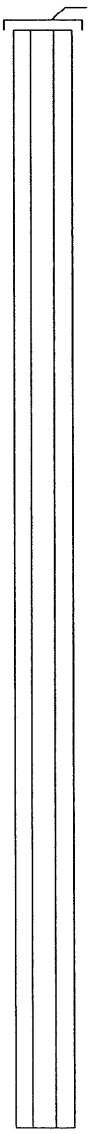
PPM CONSULTANTS

LOG OF BORING _____

Client: _____
Site: _____
Location/Address: _____
_____
AI No.: _____
PPM Project No.: _____
Project Type: _____

Boring Information:
Date/Time/ Logged By: _____
Drilling Company: _____
Drilling Method: _____
Total Boring Depth: _____
Initial Saturation (ft)/ Date: _____
Static GW Level (ft)/Date: _____
Surface Elevation (ft): _____
Sampling Interval: _____

Well Information:
Well Type: _____
Well Purpose: _____
Well Construction Date: _____
Total Well Depth: _____
Screened Interval: _____
Development Method: _____
Gallons Purged: _____

Depth in Feet	Surf. Elev.	USCS Symbol	Water Level	Graphic	Water Levels: ▼ Static GW level; ▽ Initial Saturation — DESCRIPTION	Sample No./Interval	Percent Recovery	Headspace Concentration (ppm)	Depth in Feet	Well Schematic:
0									0	
3									3	
5									5	
7									7	
9									9	
10									10	
11									11	
13									13	
15									15	
17									17	
19									19	
20									20	

NOTES:

04-14-2009 C:\Documents and Settings\robin breland\Desktop\Blank boring log 20 ft.bor